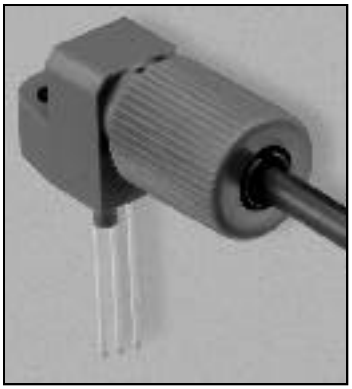


DESCRIPTION

The IF-D96 is the 5 MHz photologic detector in Industrial Fiber Optics' family of low-cost, medium-frequency, short-distance fiber optic LEDs and detectors. Each LED and detector consists of a polycarbonate (PC) housing, an internal active element such as an LED or photodetector subcomponent, and a cinch nut to hold the fiber in place. The PC housing optimizes coupling between the active element and the jacketed 1000 µm core plastic fiber.

The IF-D96OC has an inverted open-collector output (active low). It contains an IC with a photodiode, linear amplifier, voltage regulator, and Schmitt trigger. The device features TTL/CMOS compatible logic level output which can drive up to 5 TTL over supply voltages ranging from 4.5 to 18 volts.

Working with this family of fiber optics devices is simple: No special tools or training required. Only a sharp knife or razor blade is needed to terminate the plastic fiber. When the fiber is inserted into the LED or detector housing, tighten the cinch nut. Thereafter, the fiber can be removed simply by loosening the nut.

APPLICATIONS

- Household Appliances
- Motor Controller Triggering
- PC-to-Peripheral Links
- Medical Instruments
- Intra-System Links: Board-to-Board, Rack-to-Rack
- Automotive Electronics
- Audio Systems
- Electronic Games
- Robotics Communications
- Reduction of Lightning and Voltage Transient Susceptablity

FEATURES

- No Optical Design Required
- Mates with Standard 1000 µm Core Jacketed Plastic Fiber Cable
- Internal Micro-Lens for Efficient Coupling
- Inexpensive Plastic Connector Housing
- Connector-Less Fiber Termination and Connection
- Interference-Free Transmission from Light-Tight Housing
- Open-Collector Output

MAXIMUM RATINGS (T_A=25°C)

Operating and Storage Temperature Range (T_{OP}, T_{STG}).....-40° to 85°C

Soldering Temperature (2 mm from case bottom) (T_S) t≤5s.....240°C

Supply Voltage, (V_S).....-.5 to 7 V

Voltage at Output lead.....-.5 to 18 V

Sinking Current, DC (I_C).....25 mA

Open Collector Power Dissipation (P_{TOT}) T_A=25°C.....40 mW

De-rate Above 25°C.....1.33 mW/°C

CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Value	Unit
Peak Sensitivity	λ_{PEAK}	850	nm
Spectral Sensitivity (S=10% of S_{MAX})	$\Delta\lambda$	400-1100	nm
Operating Voltage (max)	V_{CC}	5.5	V
High Level Supply Current V_{CC}=5.25 V (max)	I_{CCH}	6.3	mA
Low Level Supply Current V_{CC}=5.25 V (max)	I_{CCL}	10	mA
Light Required to Trigger V_{CC}=5 V, R_L=1 kΩ λ=660 nm	Er (+)	3.5 -24.5	µW dBm
High Level Output Voltage (I_{OH}= -1.0 µA)	V_{OH}	V_{CC}-2.1	V
Low Level Output Voltage (I_{OH}= 8 mA)	V_{OL}	0.4	V
Propagation Delay, Low-High (f= 100.0 kHz, R_L= 5 TTL Loads)	t_{PLH}	65	ns
Propagation Delay, High-Low (f= 100.0 kHz, R= 5 TTL Loads)	t_{PHL}	49	ns

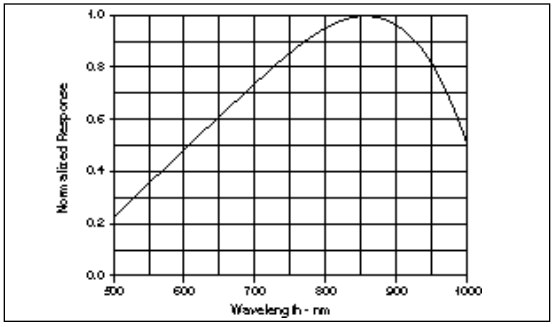


FIGURE 1. Typical detector response versus wavelength.

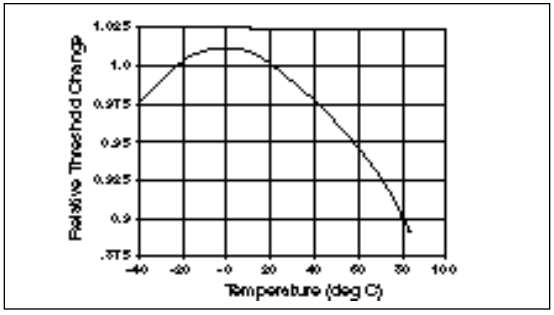


FIGURE 2. Normalized threshold irradiance vs. amb. temp.

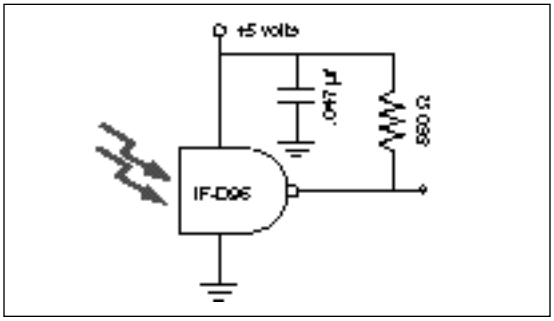
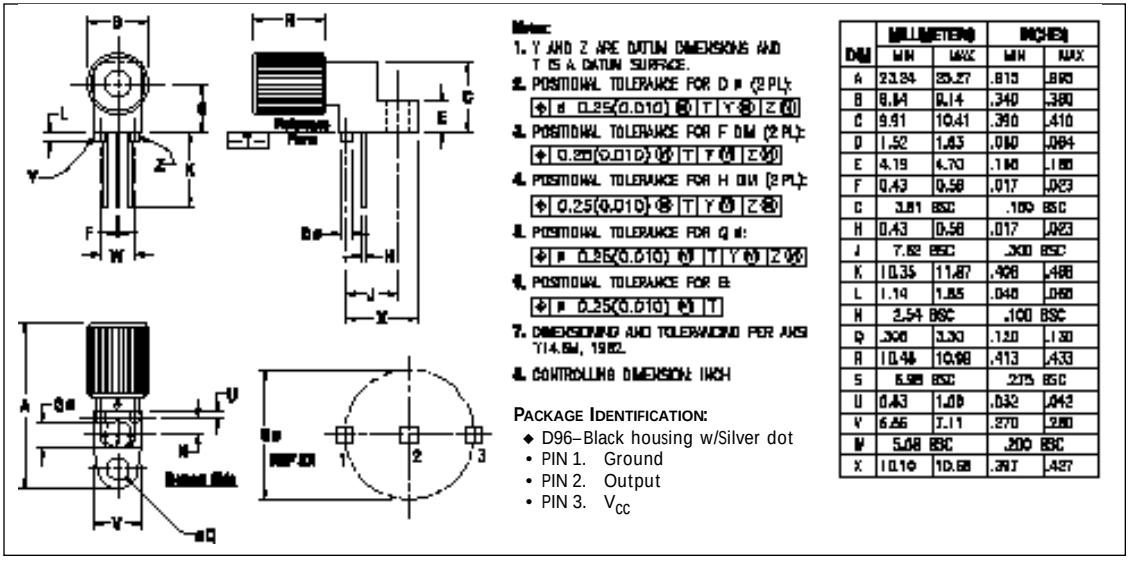


FIGURE 3. Typical operating circuit.

FIBER TERMINATION INSTRUCTIONS

1. Cut off the ends of the optical fiber with a single-edge razor blade or sharp knife. Try to obtain a precise 90-degree angle (square).
2. Insert the fiber through the locking nut and into the connector until the core tip seats against the internal micro-lens.
3. Screw the connector locking nut down to a snug fit, locking the fiber in place.


Notes:
1. Y AND Z ARE DATUM DIMENSIONS AND T IS A DATUM SURFACE.
2. POSITIONAL TOLERANCE FOR D ø (2 PL):
⌖ ø 0.25(0.010) M T Y M Z M
3. POSITIONAL TOLERANCE FOR F DIM (2 PL):
⌖ 0.25(0.010) M T Y M Z M
4. POSITIONAL TOLERANCE FOR H DIM (2 PL):
⌖ 0.25(0.010) M T Y M Z M
5. POSITIONAL TOLERANCE FOR Q ø:
⌖ ø 0.25(0.010) M T Y M Z M
6. POSITIONAL TOLERANCE FOR B:
⌖ ø 0.25(0.010) M T
7. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
8. CONTROLLING DIMENSION: INCH
PACKAGE IDENTIFICATION:
◆ D96–Black housing w/Silver dot
• PIN 1. Ground
• PIN 2. Output
• PIN 3. V_{CC}

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	23.24	25.27	.915	.995
B	8.64	9.14	.340	.360
C	9.91	10.41	.390	.410
D	1.52	1.83	.060	.084
E	4.19	4.70	.165	.185
F	0.43	0.58	.017	.023
G	3.81 BSC		.150 BSC	
H	0.43	0.58	.017	.023
J	7.62 BSC		.300 BSC	
K	10.35	11.67	.408	.468
L	1.14	1.65	.045	.065
M	2.54 BSC		.100 BSC	
Q	.305	3.30	.120	.130
R	10.46	10.98	.413	.433
S	6.98 BSC		.275 BSC	
U	0.43	1.09	.032	.042
V	6.86	7.11	.270	.280
W	5.08 BSC		.200 BSC	
X	10.10	10.68	.397	.427

FIGURE 4. Case outline.